

Alaska Department of Fish and Game  
Division of Wildlife Conservation  
**September 2003**

# Landscape Ecology and Population Dynamics of Moose in GMU 13

Grant V. Hilderbrand

Research Performance Report  
1 July 2002–30 June 2003  
Federal Aid in Wildlife Restoration  
Grant W-33-1, Study 1.55

This is a progress report on continuing research. Information may be refined at a later date.

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**FEDERAL AID  
ANNUAL RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF WILDLIFE CONSERVATION  
PO Box 25526  
Juneau, AK 99802-5526

**PROJECT TITLE:** Landscape ecology and population dynamics of moose in GMU13

**PRINCIPAL INVESTIGATOR:** Grant V. Hilderbrand

**COOPERATORS:** Howard Golden, Bill Collins, Todd Rinaldi, Jim Wendland, ADF&G and Don Spalinger, University of Alaska Anchorage

**FEDERAL AID GRANT PROGRAM:** Wildlife Restoration

**GRANT AND SEGMENT NR.:** W-33-1

**PROJECT NR.:** 1.55

**WORK LOCATION:** Nelchina Basin, Game Management Unit 13

**STATE:** Alaska

**PERIOD:** 1 July 2002–30 June 2003

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**I. PROGRESS ON PROJECT OBJECTIVES**

**OBJECTIVE 1:** *Establish a comprehensive GIS for GMU 13.* A GIS database has been implemented for moose locations.

**OBJECTIVE 2:** *Determine the feasibility and potential costs and benefits of replacing traditional moose counts with modern spatial density estimates.* Both methods were employed in 2000 to build the data set from which this objective will be addressed.

**OBJECTIVE 3:** *Develop statistical/biological models of population trends for moose in the NSA.* Bayesian models of population trend have been developed, as well as deterministic and stochastic models that incorporate population parameters determined from radiocollared moose.

**OBJECTIVE 4:** *Develop and test landscape models of habitat quality and utilization for moose in GMU 13.* No work has been performed on this aspect.

**OBJECTIVE 5:** *Develop and test landscape models of predation risk for moose in GMU 13.* H. Golden's work on wolf movements is the first step toward this objective.

## **II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD**

JOB 1: *Trend count and composition surveys.* Due to weather constraints, trend count and composition surveys were not conducted this year

JOB 2: *Moose density estimates.* A spatial density estimate in the Nelchina Study Area was not completed this year.

JOB 3: *Radiocollaring moose.* Twenty-eight moose were captured and equipped with radiocollars as part of two capture operations. We had one capture-related mortality of a yearling moose.

JOB 4: *Radiotracking/survival/reproduction.* Forty-five aerial radiotracking flights accounted for 3,842 locations and observations of reproductive status of 68 moose in the project period.

JOB 5: *Vegetation/browsing surveys.* No work was completed relative to this job this year.

JOB 6: *Geographic Information System (GIS) management.* Moose locations were entered into ArcView GIS for future analysis.

JOB 7: *Spatial and population modeling.* Deterministic spreadsheet models, and stochastic models of population growth were developed to estimate population growth rates.

JOB 8: *Meetings and publications.* The following were published or submitted in the project period: See publications below.

## **III. ADDITIONAL FEDERAL AID FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD**

We conducted a pilot study to assess calf mortality. Twenty-one newborn calves were radiocollared and followed daily (24 flights) to determine cause of death. Eighteen of the twenty-one (85.7%) newborn calves had died by the time this report was filed.

## **IV. PUBLICATIONS**

Testa, J. W. Population dynamics and life history trade-offs of moose (*Alces alces L.*) in southcentral Alaska. Ecology. In review.

Testa, J. W. Interaction of top-down and bottom-up life history trade-offs in the population dynamics of moose (*Alces alces L.*). Ecology. In review.

## **VII. PROJECT COSTS FOR THIS SEGMENT PERIOD**

FEDERAL AID SHARE \$ 78,673 STATE SHARE \$ 26,224 = TOTAL \$ 104,897

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**APPROVAL DATE:** \_\_\_\_\_